ABSTRACT

Disclosed is a method of evaluating mathematical model parameters which describe directions and magnitudes of real and imaginary components of orthogonally related Kramers-Kroenig consistent dielectric functions or complex refractive indicies in an optically thick material system which presents with an optical axis oriented either in-plane or out-of-plane, with respect to an alignment surface of the optically thick material system. The method is particulary applicable to investigation of optically thick material systems which are at least uniaxial in that magnitudes of corresponding real and corresponding imaginary components of at least two orthogonally related optically thick material system characterizing diagonalized tensor:

$$\tilde{\varepsilon}(E)=\begin{bmatrix} \varepsilon_{sc} & 0 & 0 \\ 0 & \varepsilon_{sc} & 0 \\ 0 & 0 & \varepsilon_{pc} \end{bmatrix}$$

complex dielectric functions or refractive indicies are equal. Application of the method to biaxial optically thick material systems, wherein corresponding real and corresponding imaginary components of the orthogonally related optically thick material system characterizing diagonalized tensor complex dielectric functions or refractive indicies are unequal and to optically thick materials systems which demonstrate non-zero off-diagonal terms is also possible, where sufficient additional data sets are acquired. The present invention is practiced utilizing wavelengths in the infrared range of 5 to 40 microns.